Vol. 4 December 1940 No. 5

The EXTENSION ENTOMOLOGIST

1940 is fast coming to a close. The Extension Entomologist, like the trees, could no doubt shed some leaves which have served their purpose. The persons for whom this publication is prepared can best decide which leaves to discard. Throughout the winter the scrub oak holds tenaciously to its worthless foliage as if ashamed of the growth it has made. In the spring the old leaves are dislodged by the new growth. We should be proud of our growth and be glad to shed the old for something better. We need not wait until spring to start, so send in your suggestions now in order that our publication may bud forth with new ideas. Which parts of The Extension Entomologist are of most value to you, and which parts can be deleted? Do the excerpts from annual reports help you? Are you reporting for our use the type of information you would like to have from other States?

This publication should assist in preparing our plans of work by calling attention to some larger problems and what steps our fellow workers are taking to meet them. Plans of work will soon be due, so let us become acquainted with the work of others, and pull together for the good of the public.

It has been particularly gratifying to see the progress that has been made since the early days of extension. Each one can feel justly proud of the contribution he has made. We cannot rest on past laurels, however, but must keep ever on the alert for new methods of attack. When a good method is found, send it to The Extension Entomologist, to be passed along to others.

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE AND
EXTENSION SERVICE, COOPERATING

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UNITED STATES DEPARTMENT OF AGRICULTURE

Washington, D. C.

THE EXTENSION ENTOMOLOGIST

Issued by the Extension Service and the Bureau of Entomology and Plant Quarantine cooperating with other Federal and State agencies in the furtherance of extension work in entomology.

M. P. Jones
Senior Extension Entomologist

NOTE

Distribution of Extension Entomologist.

A number of requests have been received from staff members that their names be placed on the mailing list of The Extension Entomologist, which we are unable to do, however, because of the limited edition. This suggests that each issue going to a person in charge might profitably be circularized by him among those likely to be interested.

ANNOUNCEMENT OF MEETINGS

December 27-30, 1940. American Association of Economic Entomologists. Philadelphia, Pa. Benjamin Franklin Hotel.

February 6-8, 1941. Cotton States Branch, American Association of Economic Entomologists, Waco, Tex. In conjunction with Texas Entomological Society Meeting. Raleigh Hotel.

March 25-28, 1941. North Central States Entomologists' Conference, Columbia, Mo. Tiger Hotel.

Program of the

SECTION OF EXTENSION
American Association of Economic Entomologists
Philadelphia, Pa.
Saturday, December 28, 1940, 1 p.m.

C. B. Dibble, chairman — G. E. Lehker, secretary

Panel discussions relating to extension methods and coordination of entomology with subject matter in other fields. Both the audience and panel members will participate in these discussions.

1. Methods that have proven useful in diffusing entomological information:

   a. A Survey of 2,575 Farms To Determine Insect-Control Practices Followed and Sources of Information - G. E. Lehker.

   b. Panel discussion:

      R. W. Leiby, New York, Leader
      J. O. Rowell, North Carolina
      Castillo Graham, Maryland
      J. M. Amos, Delaware
      L. E. Dills, Pennsylvania

2. Coordination of Entomology with other subject matter in extension programs relating to: (a) Crops; (b) Livestock; (c) the Home.

   a. Panel discussion:

      S. P. Lyle, in charge Agricultural and Home Economics Section, Extension Service, United States Department of Agriculture, Leader
      George Jones, Missouri
      J. O. Pepper, Pennsylvania
      C. B. Dibble, Michigan
      J. A. Evans, New York

3. Summary: M. P. Jones, extension entomologist, United States Department of Agriculture.

4. Election of officers.

5. Adjournment.

ANNUAL REPORT EXCERPTS

ONE PURPOSE OF EXTENSION ENTOMOLOGY

It is important that people learn to distinguish beneficial insects from noxious kinds, so as to preserve and protect the benefactors and guard against the marauders. In order to understand the relationship insects bear to one another, to other animals, to plants, and to man, it is necessary to learn the habits of insects and how they live. The farmer must become thoroughly familiar with their natural history. Therefore, the purpose of taking nature study to farm people is to teach them to know insects found on the farm.

--Annual Report, Kansas Extension
Entomologist, 1939.

POINT OF VIEW

It is a well-known fact that diversified farming has disturbed the ecological adjustments within the insect group. In many instances the substitution of cultivated crops (more succulent than native vegetation) has furnished abundant food to insects which become important plant pests. Moreover, the traffic in seeds, plants, and plant products has caused, through shipment, the transfer of new insects into hitherto uninfested territory. In a short space of 25 years, I have witnessed just such procedures - to be specific, the introduction of the pea weevil into South Dakota, 7 years ago. The alfalfa weevil and several stored-grain pests have been brought in in the same manner.

A great many agricultural practices favor some insects and retard others. In a State where agricultural enterprise includes largely forage and field crops, insect-pest control is an important item. We must confine our practices so that they are detrimental to insect life and not helpful. Sometimes certain field practices, beneficial from agronomic and erosion-prevention viewpoints, may prove disastrous from the entomologist's point of view. It becomes essential, therefore, that these practices be weighed and reconciled. On account of land planning as an important coming activity, it is apparent that the whole movement will fail if no consideration is given to insect and plant-disease hazards.

The producer in our State is becoming more insect-control conscious. This is due to (1) Bitter experience, (2) extension education. In fact, many of our county planning units are discussing insects with a view to land planning.

In gardens, storage, and home management, insect problems continually arise and must be met by the Extension Service.

The extension entomologist, therefore, is challenged in almost every phase of agriculture and home economics. Insects affect production, storage, livestock, and human health. Outbreaks come in cycles, sometimes man-made. With greater diversification come increased entomological problems. The extension entomologist has a challenge today greater than ever before.

--Annual Report, South Dakota
Extension Entomologist, 1939.

TRENDS IN EXTENSION ENTOMOLOGY WORK

The following are considered as trends in the work:

A. Insect problems in relation to present-day agriculture are becoming more perplexing. Farm planning, whether on an individual farm or on a regional basis, cannot overlook its relation to insect problems. The practice of strip cropping, farm storage of grains, codling-moth control, control of termites, and drainage of areas for health purposes are merely a few examples.

B. The training of 4-H boys and girls is an important step in the work from a long-time standpoint.

C. The training of local leaders in every township through meetings, letters, or other contacts is an important trend. Hundreds of people were in touch with developments in 1939 where single individuals were cooperating in 1915. Many of these hold meetings in their local counties.

D. The training of county agents to such a degree that they can hold demonstrations and direct the project work in their county is a significant trend.

E. The use of more detailed surveys aids planning work. This trend is of vital importance.

F. With more leader-training work, demonstrations seem not to be needed as much. There is evidence of a trend toward quicker adoption on the part of many farmers. They seem to accept information more readily and proceed to put it into practice if such appears practical and helpful.

G. There is a definite trend away from the use of arsenicals in orchard and garden insecticides.

--Annual Report, Missouri Extension
Entomologist, 1939

EVALUATION OF INSECT LOSSES AND COST OF CONTROL

The specialist is conscious at times of the large monetary expense vegetable growers face when applying insect-control measures to a crop. It is obvious that a grower will usually make a good return on his control investment only when the insect injury threatened is sufficient to justify the control. If control treatments are applied when they are unnecessary (and this happens too frequently) the cost of applying the insecticides will show a decrease in possible profits, or even a loss in the crop.

Suitable profits are evident when the insects are injurious or threatening; but losses would be equally evident if cabbage growers (in this instance) followed recommendations and applied control measures if they were not needed. The figures point to the need for the grower himself to use the judgment of his experience as to whether control measures are advisable. It is customary always to get into the hands of the grower the information on insect control. It should be emphasized more, perhaps, that because the information on control has been given to the grower it does not necessarily mean that control measures are justified on his particular crop. A grower may be able to make more money by withholding insecticide treatments; others make more under conditions of heavy insect infestations by applying insecticides.

An example for the evaluation of possible losses from insects, cost of control and possible profits when control measures are applied is offered. The late field cabbage crop of 1939, including 21,600 acres of kraut and Danish cabbage and grown in about nine counties, is used as the commodity.

The percentage of loss possible by each insect concerned is an estimate based on a fair amount of field observation. The percentage may be regarded as higher for 1939 than for an average year.

Example.

Estimated reduction of crop in 1939 by

Aphis	20 percent
Two kinds of worms	5 percent
Maggot	1 percent
Grasshoppers and thrips	trace of each
Total insect damage	26+ percent

Estimated cost of control per acre

Maggot	$ 1.00
Worms (3 applications)	7.10
Aphis (1½ applications)	6.75
Total cost per acre	$14.75

1939 acreage late up-state cabbage.....	21,600 acres
Cost insect control per acre.....	$14.75
Cost of controlling insects on entire crop....	$318,600

Average sale price has been $14 per ton. Production (Dept. Agr. Bur. Agr. Econ. figures) was 153,000 tons, which represents 75 percent of a crop (26 percent being regarded as possible to have been destroyed by insects if no control measures were followed). Hence if

74 percent represents 153,000 tons		
100 percent represents 206,760 tons		
Value of crop, 100 percent (without insect losses)		
206,760 tons at $14	-	$2,894,640
Actual value of crop with 26 percent insect loss		
153,000 tons at $14	-	$2,142,000
Gross potential loss due to insects	-	$ 752,640
Cost insect control 21,600 acres at $14.75	-	$ 318,600
Net profit assuming perfect control of insects		$ 434,040

It will be noted that there was a potential gross loss of $752,640, due to insect injuries. With an expenditure of $318,600 and assuming perfect control of the insects, a profit of $434,040 would have been made, or about 136 percent on the investment over a period of about 3 months.

--Annual Report, New York Extension Entomologist, 1939.

LONG-TIME GOALS

1. Township leaders in each county organized and trained in insect-control work.

2. Keep all county agents trained and well informed as to insect developments, infested areas, and need of work--every agent planning and doing work.

3. Strive always to reach all types of farmers - those who have never been reached with any extension work as well as the leading ones.

4. Teach the work in such manner as to demonstrate the value of crop protection and prevention of losses due to insects, and thus make for a more permanent and stable agriculture.

--Annual Report, Missouri Extension Entomologist, 1939.

STRIPED CUCUMBER BEETLE CONTROL

The control of the striped cucumber beetle on cantaloups was carried out on test plots in St. Louis and Scott Counties. Various materials, such as cryolite, arsenate of lead and fine lime, pyrocide and cal-gyp,

were used. The infestation was not great enough to draw final conclusions, but the cryolite plots again produced more pounds of melons than the cal-gyp plots. The cal-gyp plots produced less than any of the other plots. The arsenate and lime plots were also among the best.

In Jefferson County where a grower was interested in producing pickles, cryolite and pyrocide were used, and little difference could be seen in the plots. Bacterial wilt killed most of the plants in early August.

--Annual Report, Missouri Extension
Entomologist, 1939.

WIREWORM CONTROL

During 1938 when the most serious wireworm damage occurred in South Carolina, it became necessary for the Extension Service to devote a considerable part of various specialists' and county agents' time to wireworm control. That this emphasis is justifiable is easily understood when one surveys the extensive area in the coastal section of South Carolina that is infested or subject to infestation by wireworm. Cotton and corn were most seriously damaged, though Irish potatoes and tobacco were also damaged.

Many farmers had in a way solved the wireworm problem by owning twice as much tillable land as they cultivated during any one year. On about one-half of this land, weeds were allowed to grow and the other half was cultivated. In order to obtain AAA payments for planting legumes, some of these farmers planted cowpeas on the land which normally grew weeds. Farmers and agricultural leaders of that section felt that it was because of this change in farm practice that the serious wireworm outbreak of 1938 occurred. All available information indicated that the addition of cowpeas and other legumes would enrich the soil and make larger crops possible. But, on the contrary, complete crop failure frequently followed a crop of cowpeas and certain other crops.

During the wireworm outbreak, many agricultural authorities representing numerous agencies visited the area, studied the problem, and agreed that this was a problem which should be approached by the demonstrational method to apply what had been discovered by various workers during the past 30 years.

From an educational standpoint, one of the difficulties which must be overcome is to teach the farmers that a number of practices are linked together, and must all operate in order to secure the best results. The most important factors in this chain are rotation, resistant crops, land resting, increased soil fertility and humus, and, with certain specialized crops, the regulation of planting dates.

* * *

Long-time demonstrations showed that the same fields which produced less than a bushel of corn per acre during 1938 produced an average estimated oat yield of 23 bushels during 1939. The maximum oat production was 65 bushels per acre on a farm where wireworm damage was complete last year. Another farmer produced a fair yield of wheat (estimated at 16 bushels) on a field where corn was destroyed by wireworms during 1938. Still another farmer found that 2 acres of oats on infested soil furnished winter grazing for 2 sows and 10 pigs. All the demonstrators were pleased with the oat yields in comparison with the previous corn yield, although most believed that the small-grain yields could have been materially increased by more careful attention to such factors as liming, fertilization, and time of planting.

Observations during the fall of 1939 indicated that the best legume growth on the demonstrations was made by crotalaria. Velvetbeans made satisfactory growth until the velvetbean caterpillar attacked them. Neither of these legumes showed any apparent injury from wireworms.

--Annual Report, South Carolina
Extension Entomologist, 1939.

ANT CONTROL

During the summer, D. M. DeLong, professor of entomology at Ohio State University, sent me a sample ant killer which a student in his department had perfected. It gave satisfactory results and seemed so promising that one was requested for each county and home demonstration agent in South Carolina. These ant killers were supplied by a commercial agency, and the agents made a report as to their effectiveness. Thirty-three out of thirty-five cases where results were reported indicated satisfactory results.

--Annual Report, South Carolina
Extension Entomologist, 1939.

FENCE-POST PRESERVATION

Interest in fence-post-preservation projects continues, even though we have repeatedly stressed a lack of certain information which we would desire in order to campaign on the practice.

The first demonstrations along this line were conducted beginning early in 1938 and continuing to the present time. Each demonstration consists of some few-to-many posts, and no effort has been made to get anyone to treat a large number of posts. Every person treating a large number of posts has been warned that any risk must be assumed by the demonstrator.

The primary purpose of these demonstrations has been to get a few posts located at a large number of places, as it is felt that, if the treatment succeeds, as we have every reason to believe it will, the practice will sell itself.

A complete record is being kept on all demonstrations, regarding the length of life of the posts and the amount of corrosion, if any, encountered from the preservative treatment. Both bluestone and zinc chloride have been used, and in only one instance was corrosion noted from the use of the former.

Summary of Fence-Post-Preservation Demonstrations
(forty-eight demonstrators in 25 counties in 1938)

Posts treated	Method of treatment	Beetle attack noted
With bluestone solution:		
422	Trough	None
550	Trough	Very slight
70	Trough	Some
35	Trough	Severe
6	Capping	None
1	Capping	Slight
6	Tire tube	None
8	Tire tube	Slight
With zinc chloride solution:		
175	Trough	None
47	Trough	Some
37	Trough	Severe
2	Capping	None
6	Capping	Severe
98	Tire tube	None
50	Tire tube	Slight

In 1939, 1,193 additional posts were treated by 18 additional demonstrators in 13 counties. This makes a total of 2,706 treated posts in all the demonstrations.

The greatest number of posts treated were pine. However, some poplar, maple, gum, oak, hickory, and cedar were included in the test, with practically no difference in results.

--Annual Report, South Carolina
Extension Entomologist, 1939

SCREWWORM OUTBREAK THWARTED

Screwworms came into the State in early April. Through the cooperation of W. E. Dove of the United States Bureau of Entomology and Plant Quarantine, the extension entomologist was warned of the serious infestation of screwworms in cattle which were being shipped into the State. A trainload of badly infested cattle from New Mexico and southern Texas were unloaded at Emporia: Through the efforts of the extension entomologist, all the infested cattle were treated with benzol and pine tar oil before sale and transfer to pasture. Many other carloads of infested cattle from southern Louisiana and Texas were treated at unloading points in southern Kansas through the efforts of the county agricultural agents. Due to this movement, there were not many serious outbreaks in the State in 1939.

--Annual Report, Kansas Extension
Entomologist, 1939.

COTTON-INSECTS-CONTROL PROGRAM

Meetings.

In order for county agents and farmers to become well acquainted with cotton insects and the method of determining when to apply control measures, county agents called meetings in their respective counties. At these meetings all persons such as farmers, bankers, seed crushers, ginners, merchants, and others who were interested in the production and handling of cotton and its byproducts were invited to attend illustrated lectures that were chiefly concerned with four insects: Cotton boll weevil, cotton flea hopper, cotton bollworm and leaf worm. At these lectures United States Department of Agriculture film strips illustrating the methods of obtaining infestation records, types of dusting equipment suitable for dusting cotton, and the various insecticides recommended for the control of the above insects were shown. All matters pertaining to their control were discussed by the entomologist, and also a free discussion by the audience was encouraged and welcomed.

Field trips.

After this initial meeting and when cotton was up and fruiting, field trips were held in these counties so that all who were interested could go to the field and there learn to identify these insects in question and learn for themselves by experience to determine when to dust or not to dust for economical control.

Demonstrations.

In certain selected counties, agents were encouraged to set up demonstrations to demonstrate the fact that if the proper procedure was followed it would be possible to lower the cost of production by increasing the yield of cotton per acre through intelligent and economical insect control

Visual aids.

The Trinity County agent says: "Mr. Avery and his son, P. J., who farms with him, attended a picture show demonstration on the major cotton insects on the night of last April 17 in the agricultural building in Groveton. They listened attentively as Cameron Siddall, assistant entomologist with the Extension Service, lectured on the control and preventive methods, their habits and characteristics, as he flashed them on the screen.

"F. J. Avery dropped into the county agent's office a few days later to obtain a little more information about the cotton 'bugs' and to secure a copy of U.S.D.A. Bulletin No. 1688, 'Insect Enemies of the Cotton Plant.'

"When a small horse-drawn cotton duster was placed on the market in the spring, the first one sold went to the Avery farm."

As the cotton started to bloom, the war began and although there was a total of 93 acres on the Avery farm, only the 12-acre patch was dusted. On these 12 acres dusted three times he lacked only 180 pounds of making sixteen 500-pound bales or 651 pounds per acre, which is a fair and just reward for his effort.

"Although 70 years of age and having made 42 crops, Mr. Avery is enthusiastic about the future for dusting cotton to kill or repel insects. He plans to dust his entire crop during the current crop season. Fifteen or twenty neighboring farmers watched the dusting operations and saw the increased yield, according to the Averys.

"'I believe that dusting cotton for insects will pay to the extent that we will make cotton like we used to before the bugs came,' Mr. Avery said as he drove another nail on the new tool shed that he was building as the county agent and a friend departed."

The Hamilton County agent says: "W. F. Lawson of the Lanham community and Lee Schrank of the Aleman community came into the office and reported their results of poisoning cotton. Both of these men started poisoning early and poisoned all through the growing season.

"Mr. Lawson reported that his expenses ran about $2.80 per acre, and he made a lint yield of 272 pounds on a farm that normally runs about 166 pounds per acre. Mr. Schrank ran a cost of $2.50 per acre, and he made a lint yield of 250 pounds on a farm that normally runs about 160 pounds to the acre.

"By these results you can see that each of these men cleared approximately $6 more per acre by poisoning. If all the cotton farmers in this county could clear this amount on the average per acre on their allotment this would mean a net-gain income of about $283,866 to Hamilton County."

Our problem is not one of convincing farmers or demonstrating to them that cotton insects can be controlled by certain insecticides, but our problem is to show farmers that by following closely the activities

of insects in the cotton to determine the correct time to make application of insecticides that they (the farmers) may reasonably expect greater net returns than if they follow the practice of applying poisons at a certain growth stage of the crop and continue to make applications at regular intervals whether insects are present in sufficient numbers to do damage or not.

--Annual Report, Texas Extension Entomologist, 1939.

LOCAL LEADERS USED IN GARDEN-INSECT CONTROL

There was an increased interest in insect control in farm gardening throughout the State. Many county agents and home demonstration agents discussed insect control at leader and community meetings. In four counties, leaders were invited in for a training meeting, and the leaders discussed the subject in their local clubs. This attempt was the first in carrying on the work, and in 1940 there seems to be more interest than ever.

According to the county agents' statistical report, over 22,000 farmers in 89 counties practiced garden-insect control. The garden-insect-control circular prepared in 1938 had to be reprinted in the early fall of 1939.

--Annual Report, Missouri Extension Entomologist, 1939.

COOPERATION WITH SMITH-HUGHES TEACHERS

In addition to the regular outline project work in 1939 an attempt was made to reach as many of the Smith-Hughes teachers in the State as possible with up-to-date insect-control information. In the winter a set of true and false questions on garden- and field-crop insect control was prepared at the request of one of the county agricultural agents for use in night-school work. After this material had been prepared, it seemed feasible to offer this to Smith-Hughes teachers to use in connection with night schools and in connection with their class work if they wished to use it. A letter sent to them offering this service brought over one hundred replies and requests for copies of sets of the true and false questions for use by these people.

The ready acceptance of this offer leads us to think that there is a demand for other material of this sort, and we have in preparation other sets of questions on the subject matter of the various listed subprojects which will be offered to the Smith-Hughes teachers in a similar manner.

--Annual Report, Michigan Extension Entomologist, 1939.

4-H ENTOMOLOGY CLUB WORK

4-H entomology club work was again stressed by the 4-H Club department. Five hundred and twenty-four boys and girls carried on the work, and 31 counties were involved. This project is relatively new in the State - 1939 was the second full year since it was organized. Getting a leader is one of the problems, but it seems that this objection is not a serious one. A second-year project is needed, and perhaps during 1940 something will be developed.

This work is a result of the 4-H entomology club discussion and work given at 4-H club camps discussed. It is felt that this work will aid in the broader aspects of the purpose of the State Insect Pest Control Council, which was formed in 1938.

One of the tasks of the State committee was to inform more people about insects and arouse interest in young people in order that control work could be better understood. From the long-time standpoint, this project may aid in training future leaders who will have a better knowledge of control problems.

--Annual Report, Missouri Extension
Entomologist, 1939.

PRESS RELEASES ON ENTOMOLOGY HEAD THE LIST

Nine press articles were prepared and released to the Department of information and publicity. Press clippings indicate that they were used extensively. Through the use of these articles the Department of Entomology led all other departments in two of the monthly reports released by the Department of Information, and was close to the highest circulation in other months.

There is a basis for an estimate that the articles on vegetable insects were used in weekly and daily papers with a total circulation of between 4 and 5 million. This is a high figure when circulation within one State only is considered.

--Annual Report, New York Extension
Entomologists, 1939.

TWILIGHT MEETINGS

During the season, some of the county agents arranged so-called twilight meetings for the purpose of presenting important last-minute developments to the farmers on the eve of making a spray application. Whenever one of these meetings coincided with a visit of the specialist to the county, the specialist was called upon to speak to the growers on current insect-control information.

--Annual Report, New York Extension
Entomologists, 1939.

OUTLOOK

A. Three new insects--pear psylla, vetch weevil, and squash bug--will have to be included in the program for next year.

B. Because of the serious problem developed in grain elevators through an increase in infestations by granary weevils and bran bugs, educational meetings, surveys, and demonstrations of control measures will have to be conducted.

C. The work on garden insects must be increased through the program on the farm food supply.

D. The work on pea weevil will have to be continued, since the dusting program is receiving wide approval. The specialist will prepare or assist in the preparation of bulletins on pea-weevil control, pear psylla, and truck crop insects, since the demands for information on these insects are steadily increasing.

E. The insect pest survey and the weekly news letter were so well received that they will be continued the next year.

F. The Extension Entomologist will continue to prepare information for the Insect Pest Handbook for county agents.

G. Other subprojects will be included as requests come in from county agents in the form of projects in entomology.

H. County farm and home program recommendations will have a definite bearing on projects selected for 1940.

--Annual Report, Washington Extension Entomologist, 1939.

EXTENSION LOOKS BACKWARD TO THE BOLL WEEVIL

Any survey of the Extension Service must begin with the development of science and of the democratic processes of government. This type of agricultural education began with "the creative thinking of a few individuals * * *".

It was the boll weevil in Texas, however, which served as the immediate reason for the crystallization of these ideas and philosophies. As early as 1892, farmers, business interests, and newspapers had appealed to Congress for assistance in combating the bool weevil. In answer to their appeals, $25,000 in 1904 was set aside for Texas. This appropriation was to be used under the direction of Dr. Seaman A. Knapp, the father of the demonstration method. Dr. Knapp's original 33 Texas appointees, who were known as special agents of the Department of Agriculture, served for salaries averaging around $60 per month, sometimes paying their own expenses.

--Texas Extension Work, 1939, Annual Report of Director, H. H. Williamson.

SPOKEN WORD VS. VISUAL AIDS

The names of 30 common objects, selected because they were thought to be equally well known by several hundred school children, were divided into three groups. (1) Ten names were pronounced to the pupils. (2) Ten names were written on the blackboard and covered. The pupils were permitted to see one name, and it was then erased. This procedure was followed for the ten names. (3) Each name in the third list was pronounced to the pupils as the object named was shown to them.

Which list of names did the children remember? The answer is given in the following table.

Method of presenting names to children	Average number of words remembered by pupils	
	Immediately	After 3 days
Words spoken by teacher.....	7.1	1.0
Words shown on blackboard.....	7.2	2.0
Words spoken and objects displayed.....	8.6	6.5

Did the sight of the objects aid the children to remember the names? There was little difference in the immediate results, but a striking difference after the lapse of 3 days.

--Use of Visual Aids in Cooperative Extension Work in Agriculture and Home Economics. United States Department of Agriculture Extension Service Circular 343.

T I M E L Y T O P I C S

POTATO PSYLLID CONTROL

F. F. Whitley of the New Mexico Extension Service, says in Farm and Ranch, October, that potato psyllid, formerly controlled by liquid lime-sulphur, is subject to effective and more economical control with dusting sulphur. While sulphur dusting has some draw-backs, the equipment for applying dust is relatively inexpensive, and research men of the New Mexico Experiment Station state that it is as effective as liquid lime-sulphur in the Virden Valley.

NICOTINE DUST SUPERIOR TO ROTENONE DUST FOR CABBAGE APHID CONTROL

In field tests conducted at South Point, Ohio, N. F. Howard and his associates of the Columbus laboratory, Bureau of Entomology and

Plant Quarantine, found that a dust mixture containing nicotine was superior, in controlling Brevicoryne brassicae (L.) on cabbage, to the rotenone-tobacco-dust-sulphur-dust mixture now recommended for turnip aphid control in the South. Sulphur nitride was ineffective, and it was necessary to apply the nicotine-dust mixture to these plots in order to prevent serious injury by the aphid. The grower was harvesting grade A 1 cabbage from the plots treated with nicotine-dust mixture.

A field of cabbage nearby, which was infested severely by the cabbage aphid and not treated with any insecticides, was practically a total loss. The plants were small and stunted. Although parasites and predators reduced the aphid population to a low point, this reduction occurred too late to save the crop.

CODLING MOTH PEST DATES BACK TO PLINY

When you discover a worm in an apple, you're looking at a codling moth, member of one of the world's most historic and well-traveled families of insect pests.

Cato some two centuries before Christ, and Pliny in the first century A.D. wrote about wormy apples that were doubtless infested with codling moth. In 1635, almost with the beginning of purely entomological literature, a Dutch scientist named Goedaerdt wrote a treatise on the codling moth and drew pictures of it in various stages of its development. Under one name or another it has plagued human apple-eaters since the dawn of history.

The native home of the codling moth was southeastern Europe, but early in the nineteenth century it set out to see the world. Within that century it spread over Europe, and into Australia, Tasmania, and New Zealand, South Africa, and South and North America.

In the United States, in 1819, codling moth was first found infesting apples and pears near Boston. Twenty more years found it firmly established in the orchards of New England. By 1860 it was attacking fruit in Iowa, and in the spring of 1874 it completed its transcontinental journey by appearing in California. It is now a serious fruit pest in almost every apple-producing area in the Nation.

--A. D. Borden, Associate Entomologist,
College of Agriculture, University
of California, Berkeley.
In: Agricultural Leaders' Digest,
July 1940.

HOUSEFLIES CARRY BOVINE MASTITIS

D. A. Sanders, of the University of Florida, says that common houseflies, together with a less familiar insect genus known as frit fly or eye gnat, are carriers of bovine mastitis, the troublesome and loss-causing bacterial disease that attacks cows' udders.

Dr. Sanders suggests that the eye gnat may also carry the germ of brucellosis or contagious abortion among cattle. (Science Service.)

PHENOTHIAZINE AND FARM HELP

Phenothiazine, the new insecticide that has been discussed in farm magazines so much of late, has already "run into trouble," according to the Farm Journal and Farmer's Wife, August. "Acute cases of sun-burn suffered by orchard workers have been found by Stanford University scientists to be the result of inhaling phenothiazine," the story says. "Research experiments indicated that while the chemical had no effect when daubed on the skin and the skin exposed to sun lamps, when it was taken by mouth the skin was highly sensitive to light."

The scientists suggest, in a report to the American Medical Association, that workers protect themselves by wearing masks to prevent inhalation of the fumes, and also by wearing suitable clothing to keep out the light, or by covering exposed skin areas with a protective coating such as zinc oxide ointment, or even some of the phenothiazine itself. (The research work was done by Dr. F. Deeds of the United States Department of Agriculture, working in a laboratory in the Stanford Medical College, San Francisco.)

EFFECT OF BORON ON ALFALFA ATTACKED BY POTATO LEAFHOPPER

F. W. Poos, of the Arlington, Va., laboratory, Bureau of Entomology and Plant Quarantine, reports that experiments on the effect on the potato leafhopper of varying amounts of boron in the nutrient solutions supplied to vegetatively produced alfalfa plants showed no significant differences in the number of nymphs produced on the various lots.

Plants receiving no boron showed diseaselike boron-deficiency symptoms, and such symptoms seemed to be aggravated by the presence of potato leafhoppers on such plants. Symptoms typical of potato leafhopper injury occurred coincidentally on such plants.

Field observations on small plots in south central Virginia indicate that 10 pounds of borax per acre, applied in fall or spring, will prevent much yellowing of alfalfa not caused by the potato leafhopper.

CONTROL OF ALFALFA BUGS

In Flour and Feed for August, C. J. Sorenson, of the Utah Agricultural Experiment Station, discusses the control of lygus bugs in alfalfa-seed fields. He says, in conclusion, that the Utah Station has, during the past 3 years, performed tests in which every insecticide and combination of insecticides which was thought to possess any lethal effect on these alfalfa pests has been tried without finding one that proved satisfactory. He adds that cultural methods, at present, offer the best means of control.

FEEDING ANIMALS SULPHUR DOES NOT CONTROL LICE AND OTHER PESTS

O. G. Babcock, Sonora, Tex., laboratory of the Bureau of Entomology and Plant Quarantine, reports that feeding a maximum of sulphur to goats and cattle over a period of 10 months failed to retard the development of biting and sucking lice, spinose ear tick, horn fly, and stable-fly. Some animals were kept in dark stalls for 3 months, then exposed to the sunlight for the remainder of the test; others were kept in pens in the open.

SULPHUR-DERRIS AN EFFECTIVE DIP FOR CONTROL OF LICE ON RANGE BREEDING CATTLE

O. G. Babcock, Sonora, Tex., reports complete kills of the short-nosed cattle louse (Haematopinus eurysternus Nitz.) with a mixture of elemental 325-mesh sulphur, a mineral filler, and derris. Eggs were not destroyed.

NEON LIGHTS LURE INSECTS

Red-and-green neon lights have been installed under water in Federal trout hatcheries at the Spearfish, S. Dak., Station, to attract insects as food for fish. These submarine lights are expected to prove better lures for insects than the above-water, drop-cord lights which are commonly used.

--Louisiana Conservation Review,
Spring, 1940.

YELLOW ELECTRIC GLOBE AS AN INSECT-REPELLENT LAMP

G. H. Bradley and B. V. Travis, of the New Smyrna, Fla., laboratory, Bureau of Entomology and Plant Quarantine, have tested a yellow electric-light globe (advertised as an insect-repellent lamp) in a light trap in comparison with a standard white light. Collections over a period of eight nights in which the globes were interchanged, gave almost identical numbers of the three principal species of pest mosquitoes with the two lights. The total volume of other insects taken was slightly greater with the yellow light.

MODIFICATION OF METHYL BROMIDE FUMIGATION REQUIREMENTS

Another modification of the methyl bromide fumigation instructions, effective June 4, reduced the dosage of fumigant required per refrigerator car from 5 to 4 pounds when the temperature is 80° F. This reduction will lessen the cost of fumigation and eliminate some hazards in the fumigation of certain fruits and vegetables. The treatment at the reduced dosage is approved for white potatoes, sweetpotatoes, onions, tomatoes, snap beans, lima beans, sweet corn, cabbage, carrots, beets, apples, and peaches. The reduced dosage at the higher temperature is also authorized for the fumigation of these commodities in approved fumigation chambers.

--Division of Japanese Beetle Control,
Bureau of Entomology and Plant
Quarantine.

WATER SEAL SIMPLIFIES CONSTRUCTION OF FUMIGATION CHAMBER

A number of difficulties were encountered in the construction of an airtight fumigation chamber at one of the large northern New Jersey nurseries. The most difficult feature was to construct and make tight an exhaust trap door for the ventilating system.

Upon the suggestion of one of the members of the treating section, the nursery constructed a water-seal door that has proved satisfactory. Tests made in small chambers that can be made airtight have shown that the heat and gas expansion in the box during the fumigation process exert only a 1 mm. mercury pressure. This pressure is about equal in weight to a ½-inch column of water, so that an all-around seal of 1½ to 2 inches of water is sufficient to hold the gas in all commercial chambers.

The use of the water seal simplified the construction and made the seal positive, eliminating the use of halide detectors for checking the opening. The only checking necessary is to see that the water channel is filled before fumigation begins. This same type of seal can also be adapted for fresh-air intakes.

--Division of Japanese Beetle Control,
Bureau of Entomology and Plant
Quarantine

AIRPLANE INSPECTION IN JAPANESE BEETLE CONTROL

Inspection of planes to prevent spread of the Japanese beetle by aircraft was begun at the Washington, D. C., Airport on June 26. Ten minutes before the departure of each passenger ship destined to a point outside the regulated area, a thorough inspection is made of the pilot's cockpit, the forward baggage compartment, passengers' cabin, and rear baggage compartment. After this inspection, and when no loading of passengers or freight is taking place, all doors and openings are kept closed to prevent beetles from flying in.

All baggage and mail bags are watched as they are put on each ship, and any beetles found on them are removed. Passengers entering the plane just prior to departure are watched closely for beetles which may be clinging to their garments. In the course of this inspection, 38 beetles were removed from June 26 to 30. Most of these were on mail bags and passengers or in the cockpits of the planes.

--Division of Japanese Beetle Control,
Bureau of Entomology and Plant
Quarantine

PACKING HOUSES SCREENED AGAINST JAPANESE BEETLES

Several packing houses on the "Delmarva" Peninusla started screening early in June, and it appeared that there would be practically 100-percent screening of packing houses in that area. Beetle-proofing of

the packing houses will eliminate all possibility of reinfestation after the products have been inspected. Farm scouts operating from the Dover, Del., and Salisbury, Md., offices had a much larger group of farms to scout this season. Products from uninfested farms are not subject to the same inspection at the packing houses that is given products from farms on which beetles have been found.

--Division of Japanese Beetle Control
Bureau of Entomology and Plant
Quarantine

IMPORTS OF ROTENONE PLANTS STEADILY INCREASING

The following data show the growth in the consumption of derris and Lonchocarpus (barbasco, cube, and timbo) in the United States:

Plant material	1936	1937	1938	1939	1940 1/
	Pounds	Pounds	Pounds	Pounds	Pounds
Crude cube and timbo root.....	704,120	576,151	590,854	1,907,194	1,130,879
Powdered cube and timbo root.....	1,124,936	1,263,773	1,735,995	896,640	327,589
Crude derris root	510,337	572,652	746,661	2,335,048	1,826,657
Total.....	2,339,393	2,412,576	3,073,510	5,138,882	3,285,125

SMALL MAMMALS CONTROL INSECTS

"Small Mammals and the Forest," is the title of an article in the Journal of Forestry for June, by W. J. Hamilton, Jr., and David B. Cook, of Cornell University and New York State Conservation Department.

The authors say in summary: "The role of small mammals as agents in the control of forest insects has long been overlooked. Their insectivorous nature and large numbers make them potentially more useful than birds in this respect. Through their activity on the forest floor, where they work the litter thoroughly, these mice and shrews perform a highly useful and desirable service to the forest. In addition to destroying the larval and pupal stages of many pests, they work the soil completely, allowing for better penetration of air and water. They serve as food for valuable fur-bearers and act as buffer species for predatory birds and mammals, giving added protection to valuable game species..... In brief, these small mammals, long considered only an unfavorable species, are an unrecognized asset in forest management."

1/ First 6 months.

'HORMONE' SPRAYS DELAY APPLE DROPPING

"Most apple growers have heard or read something about the 'hormone' sprays recently found by the Bureau of Plant Industry of the United States Department of Agriculture to be effective in preventing the preharvest drop of apples. Judging from the large number of requests received by the Department for specific information, most growers would like to know more about this work," says F. E. Gardner of the Bureau of Plant Industry in the American Fruit Grower for May.

"It should be pointed out that the work with hormone sprays to control apple drop is quite recent, having been used experimentally only during the past season, and although the experiments have been rather extensive, it is obviously impossible to find out in one season all that can or should be known regarding a proposed new orchard procedure...

"The most remarkable feature of these sprays in controlling the preharvest drop is the minute amount required. Concentrations on the spray of .0005 to .001 percent of the chemical result in effective control of dropping...The only effect (on the fruit) appears to be that of delaying its dropping, thereby allowing for better color development. The greatly improved color attained by many varieties by hanging a little longer than normally is an even more important advantage of the sprays than the fact that the number of grounded apples is reduced.

"The response of apple varieties to these sprays naturally raises the question as to whether the procedure might not also be as useful with a great variety of crops... At present, there is no answer to this question, although within the next few years the applicability of various growth substances to the dropping problems of many crops no doubt will be the object of considerable investigation."

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